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10/568,089

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EXAMINER

CULLEN, SEAN P

ART UNIT

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1795

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/568,089	<b>Applicant(s)</b> TOMOMORI ET AL.	
	<b>Examiner</b> Sean P. Cullen	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>02/13/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 5, 8-9 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohmura et al. (WO 9903161, see English language equivalent, U.S. 2003/0077510).

Regarding claim 1, Ohmura et al. ('161) discloses a surface treated steel sheet for a battery case (abstract) comprising:

- a steel sheet [0020]; and
- a nickel-phosphorus alloy plating layer formed on its surface which defines the inner surface of the battery case [0020].

Regarding claim 2, Ohmura et al. ('161) discloses all claim limitations set forth above and further discloses a surface treated steel sheet:

- a nickel plating layer (see nickel-cobalt alloy, [0023]) formed between the steel sheet [0023] and
- a nickel-phosphorus alloy plating layer [0023].

Regarding claim 5, Ohmura et al. ('161) discloses all claim limitations set forth above and further discloses a surface treated steel sheet:

- wherein the nickel-phosphorus alloy plating layer has a thickness in the range of 0.1 to 2  $\mu\text{m}$  (see Examples 1-6 and 8, Table 1).

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Regarding claim 8, Ohmura et al. ('161) discloses a battery case characterized by having:

- a nickel-phosphorus alloy plating layer formed on its inner surface (abstract, [0020]).

Regarding claim 9, Ohmura et al. ('161) discloses a battery case characterized by having:

- a nickel plating layer formed as an under layer [0014] and
- a nickel-phosphorus alloy plating layer formed as a top layer on its inner surface [0014].

Regarding claim 14, Ohmura et al. ('161) discloses all claim limitations set forth above and further discloses a battery case:

- formed by a deep drawing, DI or DTR method ([0118]-[0120]).

Regarding claim 15, Ohmura et al. ('161) discloses a battery employing:

- a battery case as set forth in claim 8 (abstract, [0020]) and
- packing its interior with cathode and anode active materials ([0121]-[0125]).

3. Claims 1-2, 5-6, 8-9, 12 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Hikata (JP 2000082446, see machine translation).

Regarding claim 1, Hikata discloses a surface treated steel sheet for a battery case (Drawing 2) comprising:

- a steel sheet (9); and
- a nickel-phosphorus alloy plating layer (11) formed on its surface which defines the inner surface of the battery case (Drawing 2).

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Regarding claim 2, Hikata discloses all claim limitations set forth above and further discloses a surface treated steel sheet:

- a nickel plating layer (10) formed between the steel sheet (9) and
- a nickel-phosphorus alloy plating layer (11).

Regarding claim 5, Hikata discloses all claim limitations set forth above and further discloses a surface treated steel sheet:

- wherein the nickel-phosphorus alloy plating layer has a thickness in the range of 0.1 to 2  $\mu\text{m}$  [0010].

Regarding claim 6, Hikata discloses all claim limitations and further discloses a surface treated steel sheet:

- wherein the nickel-phosphorus alloy plating layer (11) has a phosphorus content in the range of 1 to 12% by weight [0010].

Regarding claim 8, Hikata discloses a battery case (1) characterized by having:

- a nickel-phosphorus alloy (11) plating layer formed on its inner surface (Drawing 2).

Regarding claim 9, Hikata discloses a battery case (1) characterized by having:

- a nickel plating layer (10) formed as an under layer (Drawing 2) and
- a nickel-phosphorus alloy plating layer (11) formed as a top layer on its inner surface (Drawing 2)

Regarding claim 12, Hikata discloses all claim limitations set forth above and further discloses a battery case:

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- wherein the nickel-phosphorus alloy plating layer (11) has a phosphorus content in the range of 1 to 12% by weight [0010].

Regarding claim 15, Hikata discloses a battery (Drawing 1) characterized by employing:

- a battery case (1) as set forth in claim 8 (Drawing 2) and
- packing its interior with cathode (3) and anode active materials (2, Drawing 1)

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmura et al. (WO 9903161, see English language equivalent, U.S. 2003/0077510) as applied to claim 1 above, and further in view of Ohmura et al. (WO 0213289, see English language equivalent, U.S. 2004/0005499).

Regarding claim 3, Ohmura et al. ('161) discloses all claim limitations set forth above and further discloses a surface treated steel sheet:

- further comprising a nickel layer formed between the steel sheet and the nickel-phosphorus alloy plating layer [0023].

Ohmura et al. ('161) does not explicitly disclose:

- the nickel layer is an iron-nickel diffusion layer

Ohmura et al. ('289) discloses a surface-treated steel sheet for a battery case (abstract) comprising an iron-nickel diffusion layer between the steel sheet and the nickel plating layer [0009] to improve the runnability of the cases irrespective of the formation method of the battery case [0019]. Ohmura et al. ('161) and Ohmura et al. ('289) are analogous art because they are directed to surface treated steel sheets used for battery cases. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the surface treated steel sheet of Ohmura et al. ('161) with a iron-nickel diffusion layer of Ohmura et al. ('289) to improve the runnability of the cases irrespective of the formation method of the battery case.

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8. Claims 1-4, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmura et al. (WO 0213289, see English language equivalent, U.S. 2004/0005499) in view of Ohmura et al. (WO 9903161, see English language equivalent, U.S. 2003/0077510).

Regarding claims 1-4, Ohmura et al. ('289) discloses a surface treated steel sheet for a battery case [0009] comprising:

- a steel sheet [0011]; and
- a nickel plating layer formed on its surface which defines the inner surface of the battery case [0011].
- further comprising an intermediate nickel plating layer formed between the steel sheet and a nickel plating layer [0011].
- further comprising an iron-nickel diffusion layer formed between the steel sheet and the nickel plating layer [0011].
- further comprising an iron-nickel diffusion layer and a intermediate nickel layer formed between the steel sheet and the nickel plating layer [0011];
- wherein the iron-nickel diffusion layer is formed as an under layer [0011], and
- the nickel layer is formed as an intermediate layer [0011].

Ohmura et al. ('289) does not explicitly disclose:

- the nickel plating layer is a nickel-phosphorus alloy plating layer

Ohmura et al. ('161) discloses a battery case having a nickel layer formed as an under layer [0014] and a nickel-phosphorus alloy plating layer as a top layer on its inner surface [0014] to increase the corrosion resistance of the inside surface of the battery case [0036]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace



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the nickel plating layer in the battery case of Ohmura et al. ('289) with the nickel-phosphorus alloy plating layer of Ohmura et al. ('161) to increase the corrosion resistance of the inside surface of the battery case.

Regarding claim 10, Ohmura et al. ('289) discloses a battery case [0011] characterized by having:

- an iron-nickel diffusion layer formed as an under layer [0009] and
- a nickel plating layer formed as a top layer on its inner surface [0009].

Ohmura et al. ('289) does not explicitly disclose:

- the nickel plating layer is a nickel-phosphorus alloy plating layer

Ohmura et al. ('161) discloses a battery case having a nickel layer formed as an under layer [0014] and a nickel-phosphorus alloy plating layer as a top layer on its inner surface [0014] to increase the corrosion resistance of the inside surface of the battery case [0036]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the nickel plating layer in the battery case of Ohmura et al. ('289) with the nickel-phosphorus alloy plating layer of Ohmura et al. ('161) to increase the corrosion resistance of the inside surface of the battery case.

Regarding claim 11, Ohmura et al. ('289) discloses a battery case [0011] characterized by having:

- an iron-nickel diffusion layer formed as an under layer [0011],
- a nickel layer as an intermediate layer [0011] and
- a nickel plating layer formed as a top layer on its inner surface [0011].

Ohmura et al. ('289) does not explicitly disclose:

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- the nickel plating layer is a nickel-phosphorus alloy plating layer

Ohmura et al. ('161) discloses a battery case having a nickel layer formed as an under layer [0014] and a nickel-phosphorus alloy plating layer as a top layer on its inner surface [0014] to increase the corrosion resistance of the inside surface of the battery case [0036]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the nickel plating layer in the battery case of Ohmura et al. ('289) with the nickel-phosphorus alloy plating layer of Ohmura et al. ('161) to increase the corrosion resistance of the inside surface of the battery case.

9. Claims 7 and 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Hikata (JP 2000082446, see machine translation) as applied to claims 6 and 8 above, and further in view of Soejima et al. (JP 54145335, see English language abstract).

Regarding claim 7, Hikata discloses all claim limitations set forth above, but does not explicitly disclose a surface treated steel sheet:

- wherein the nickel-phosphorus alloy plating layer contains 5 to 70% by weight of cobalt.

Soejima et al. discloses a surface treated steel sheet is plated with a nickel-cobalt-phosphorus layer (abstract) wherein the nickel-phosphorus alloy plating layer contains 5 to 70% by weight of cobalt (see Ni-Co-P, Table 1; 72 wt% Ni, 20 wt% Co, 8 wt% P; 36 wt% Ni, 60 wt% Co, 4 wt% P) to raise the corrosion resistance and hardness without damaging the properties of the steel sheet (abstract). Hikata and Soejima et al. are analogous art because they are directed to the plating of steel sheets. Therefore, it would have been obvious to one of ordinary skill in the

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art at the time of the invention to make the surface treated steel sheet of Hikata with the nickel-phosphorus alloy plating layer of Soejima et al. to raise the corrosion resistance and hardness without damaging the properties of the steel sheet.

Regarding claim 13, Hikata discloses all claim limitations set forth above, but does not explicitly disclose a battery case:

- wherein the nickel-phosphorus alloy plating layer contains 5 to 70% by weight of cobalt.

Soejima et al. discloses a surface treated steel sheet is plated with a nickel-cobalt-phosphorus layer (abstract) wherein the nickel-phosphorus alloy plating layer contains 5 to 70% by weight of cobalt (see Ni-Co-P, Table 1; 72 wt% Ni, 20 wt% Co, 8 wt% P; 36 wt% Ni, 60 wt% Co, 4 wt% P) to raise the corrosion resistance and hardness without damaging the properties of the steel sheet (abstract). Hikata and Soejima et al. are analogous art because they are directed to the plating of steel sheets. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the surface treated steel sheet of Hikata with the nickel-phosphorus alloy plating layer of Soejima et al. to raise the corrosion resistance and hardness without damaging the properties of the steel sheet.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Cullen whose telephone number is 571-270-1251. The examiner can normally be reached on Monday thru Thursday 6:30 a.m. to 5:00 p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on 571-272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. P. C./

Examiner, Art Unit 1795

/Robert Hodge/

Primary Examiner, Art Unit 1795